Claims

1. A system for imaging biopsy tissue which comprises means for encapsulating an excised tissue specimen in compression in a transparent holder, and means for scanning said holder and providing an image of the tissue specimen suitable for pathological examination.

2. The system as set forth to Claim 1 wherein said imaging providing means is a confocal imaging system.

3. The system as set forth in Claim 1 wherein said imaging system includes a stage in which said encapsulated specimen is moved during imaging.

4. The system as set forth in Claim 1 wherein said scanning means comprises a stage for translating and rotating said holder.

5. The system as set forth in Claim 2 further comprising an imaging system for providing said image, said system including a head via while illuminating radiation is made incident on said specimen in said holder, and means for moving said head at least in a direction toward and away from said holder.

6. The system as set forth in Claim 1 further comprising a stage for moving said holder included in said scanning means, said stage being disposed in a container in which optical coupling fluid is contained adjacent said holder.

7. The system as set forth in Claim 1 wherein said holder is a trocar.

8. The system as set forth in Claim 1 wherein said holder is a shell said scanning means including means connected to said shell for rotating said shell about an axis, and means

engagable with said shell or a support, which constrains said shell to rotate about said axis, for translating said shell along said axis.

9. The system according to Claim 8 wherein said shell is a hollow generally cylindrical tube through which said axis extends.

10. The system as set forth in Claim 8 wherein said rotating means is a motor, said support is a pair of rollers on which said shell bears, said rollers having axes paralleling said axis, said motor being connected in driving relationship with said shell directly or via said rollers.

11. The system as set forth in Claim 8 or 10 ~~wherein said scanning~~ means further comprises an axial motion ~~mechanism~~ connected in driving relationship with a cassette, ~~including~~ said holder.

12. The system as set forth in Claim 11 wherein said rollers have helical or screw shaped surfaces in contact with said shell for providing translation thereof along said axis.

13. The system as set forth in Claim 1 wherein said scanning means provides a scan which follows a helical path.

14. The system as set forth in Claim 13 wherein said helical path traces a sheet through a volume of said specimen.

15. The system as set forth in Claim 1 further comprising means for providing alignment of said specimen with an indicia or fiducial mark on said holder, and means for referencing said image with respect to said mark.

16. The system as set forth in Claim 15 further comprising an encoder coupled to said holder for providing signals correlated positionally with said scanning means.

17. The system as set forth in Claim 1 wherein said holder is a cassette of material substantially free of bi-refringence.

18. The system of Claim 17 wherein said material is amorphous polyoelefin.

19. A method for imaging of surgical biopsies which comprises the steps of making an incision or excision in tissue of a body to provide a tissue specimen, encapsulating said specimen under compression is a transparent cassette, scanning said cassette to provide image for pathological examination of said specimen.

20. The method of Claim 19 comprising the step of making said incision with a trocar which provides said cassette.

21. The method of Claim 19 comprising rotating and translating said cassette with respect to a head of an imaging system to carry out said scanning step.

22. The method of Claim 19 further comprising the step of marking said cassette with an indicia or fiducial mark with respect to which said image is located.

23. The system as set forth in Claim 1 wherein said imaging system is operative in accordance with one of optical coherence tomography and two-photon microscopy.

24. A system for imaging a tissue sample comprising:

means for encapsulating the tissue sample in a cassette;

means for scanning the cassette to provide at least one image of the tissue sample suitable for pathological examination.

25. The system according to Claim 24 further comprising means for moving said cassette with respect to said scanning mean.

26. The system according to Claim 24 wherein said cassette is of a material optically transparent to said scanning system.

27. The system according to Claim 24 wherein said scanning means is operative in accordance with one of confocal microscopy, optical coherence tomography, and two-photon microscopy.

28. An apparatus for enabling imaging of tissue held in a cassette by an optical imaging system capable of producing images of microscopic tissue sections of the tissue, said apparatus comprising:

a stage which presents the tissue in the cassette to the optical imaging system; and

means for moving said cassette along a path with respect to the optical imaging system to enable microscopic imaging of the tissue in the cassette.

29. A cassette suitable for containing tissue excised from the body of a patient to present the tissue to an imaging system comprising:

a cylindrical chamber capable of containing an excised tissue specimen;

said chamber being made of a transparent material and having at least one end cap; and

at least one fiducial on said chamber for referencing the position of the tissue in the chamber with respect to the body of the patient.

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